



Multicast Distributed Switching Commands

This chapter documents commands used to configure Multicast Distributed Switching in Cisco IOS software. For guidelines on configuring Multicast Distributed Switching, refer to the *Cisco IOS Switching Services Configuration Guide*.



Note

Beginning with Cisco IOS Release 11.3, all commands supported on the Cisco 7500 series routers are also supported on Cisco 7000 series routers.

clear ip mds forwarding

To clear all routes from a line card's MFIB table and resynchronize it with the RP, use the **clear ip mds forwarding** EXEC command.

clear ip mds forwarding

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2(11)GS	This command was introduced.

Usage Guidelines Use this command on a line card of a Cisco 7500 or Cisco 12000.

Examples The following example clears the line card's MFIB table:

```
clear ip mds forwarding
```

Related Commands	Command	Description
	clear ip pim interface count	Clears all line card counts or packet counts.

clear ip mds linecard

To reset multicast distributed switching (MDS) line card information on the router, use the **clear ip mds linecard** command in privileged EXEC mode.

```
clear ip mds linecard {linecard-slot-number | *}
```

Syntax Description	<i>linecard-slot-number</i>	Slot number containing the line card to be reset.
	*	Indicates that the reset should be executed on all line cards.

Command Modes Privileged EXEC

Command History	Release	Modification
	12.0(19.3)S	This command was introduced.

Usage Guidelines When the * keyword is specified instead of the *linecard-slot-number* argument, all MDS information on all line cards is cleared and reset.

Examples The following example clears and resets all MDS line card information on the router:

```
Router# clear ip mds linecard *
```

Related Commands	Command	Description
	show ip mds	Clears MDS information from the router.
	show ip mds interface	Displays the MFIB table and forwarding information for MDS on a line card.
	show ip mds stats	Display switching statistics or line card statistics for MDS.
	show ip mds summary	Displays a summary of the MFIB table for MDS.
	show ip mds forwarding	Displays MDS information for all the interfaces on the line card.

clear ip pim interface count

To clear all line card counts or packet counts, use the **clear ip pim interface count** EXEC command.

clear ip pim interface count

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification

Usage Guidelines Use this command on an RP to delete all multicast distributed switching (MDS) statistics for the entire router.

Examples The following example clears all the line card packets counts:

```
clear ip pim interface count
```

Related Commands	Command	Description
	clear ip mds forwarding	Clears all routes from the MFIB table of a line card and resynchronizes it with the RP.

ip mroute-cache

To configure IP multicast fast switching or multicast distributed switching (MDS), use the **ip mroute-cache** interface configuration command. To disable either of these features, use the **no** form of this command.

ip mroute-cache [distributed]

no ip mroute-cache [distributed]

Syntax Description	distributed	(Optional) Enables MDS on the interface. In the case of RSP, this keyword is optional; if it is omitted, fast switching occurs. On the GSR, this keyword is required because the GSR does only distributed switching.
---------------------------	--------------------	---

Defaults	On the RSP, IP multicast fast switching is enabled; MDS is disabled. On the GSR, MDS is disabled.
-----------------	--

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	10.0	This command was introduced.
	11.2(11)GS	The distributed keyword was added.

Usage Guidelines	<p>On the RSP</p> <p>If multicast fast switching is disabled on an incoming interface for a multicast routing table entry, the packet will be sent at process level for all interfaces in the outgoing interface list.</p> <p>If multicast fast switching is disabled on an outgoing interface for a multicast routing table entry, the packet is process level switched for that interface, but may be fast-switched for other interfaces in the outgoing interface list.</p> <p>When multicast fast switching is enabled (like unicast routing), debug messages are not logged. If you want to log debug messages, disable fast switching.</p> <p>If MDS is not enabled on an incoming interface that is capable of MDS, incoming multicast packets will not be distributed switched; they will be fast-switched at the RP as before. Also, if the incoming interface is not capable of MDS, packets will get fast-switched or process-switched at the RP as before.</p> <p>If MDS is enabled on the incoming interface, but at least one of the outgoing interfaces cannot fast-switch, packets will be process-switched. So it is a good idea not to disable fast switching on any interface when MDS is enabled.</p>
-------------------------	--

On the GSR	On the GSR, all interfaces should be configured for MDS because that is the only switching mode.
-------------------	--

Examples

The following example enables IP multicast fast switching on the interface:

```
ip mroute-cache
```

The following example disables IP multicast fast switching on the interface:

```
no ip mroute-cache
```

The following example enables MDS on the interface:

```
ip mroute-cache distributed
```

The following example disables MDS and IP multicast fast switching on the interface:

```
no ip mroute-cache distributed
```

ip multicast-routing

To enable IP multicast routing or multicast distributed switching (MDS), use the **ip multicast-routing** global configuration command. To disable IP multicast routing and MDS, use the **no** form of this command.

ip multicast-routing [distributed]

no ip multicast-routing

Syntax Description	distributed (Optional) Enables MDS.						
Defaults	Disabled						
Command Modes	Global configuration						
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>10.0</td> <td>This command was introduced.</td> </tr> <tr> <td>11.2(11)GS</td> <td>The distributed keyword was introduced.</td> </tr> </tbody> </table>	Release	Modification	10.0	This command was introduced.	11.2(11)GS	The distributed keyword was introduced.
Release	Modification						
10.0	This command was introduced.						
11.2(11)GS	The distributed keyword was introduced.						
Usage Guidelines	When IP multicast routing is disabled, the Cisco IOS software does not forward any multicast packets.						
Examples	<p>The following example enables IP multicast routing:</p> <pre>ip multicast-routing</pre> <p>The following example disables IP multicast routing and MDS:</p> <pre>no ip multicast-routing</pre>						
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>ip pim</td> <td>Enables PIM on an interface.</td> </tr> </tbody> </table>	Command	Description	ip pim	Enables PIM on an interface.		
Command	Description						
ip pim	Enables PIM on an interface.						

show interface stats

To display numbers of packets that were process switched, fast switched, and distributed switched, use the **show interface stats EXEC** command.

show interface *type number* **stats**

Syntax Description	<i>type number</i>	Interface type and number about which to display statistics.
---------------------------	--------------------	--

Command Modes	EXEC
----------------------	------

Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines	Use this command on the RP.
-------------------------	-----------------------------



Note	When fast switching is configured on the outbound interface, and RSP optimum, RSP flow, and VIP DFS switching modes are all specified on the incoming interface, the interface on which RSP optimum, RSP flow, and VIP DFS switching modes is not enabled can still show packets switched out via those switching paths when packets are received from other interfaces with RSP optimum, RSP flow, and VIP DES switching modes enabled.
-------------	--

Examples	The following is sample output from the show interface stats command:
-----------------	--

```
Router# show interface fddi 3/0/0 stats

Fddi3/0/0
  Switching path   Pkts In   Chars In   Pkts Out   Chars Out
    Processor      3459994  1770812197  4141096  1982257456
    Route cache    10372326  3693920448   439872   103743545
  Distributed cache 19257912  1286172104  86887377  1184358085
    Total          33090232  2455937453  91468345  3270359086
```

Table 115 describes the fields in the display.

Table 115 *show interface stats Field Descriptions*

Field	Description
Fddi3/0/0	Interface for which information is shown.
Switching path	Column heading for the various switching paths below it.
Pkts In	Number of packets received in each switching mechanism.
Chars In	Number of characters received in each switching mechanism.

Table 115 show interface stats Field Descriptions (continued)

Field	Description
Pkts Out	Number of packets sent out each switching mechanism.
Chars Out	Number of characters sent out each switching mechanism.

show ip mcache

To display the contents of the IP multicast fast-switching cache, use the **show ip mcache EXEC** command.

show ip mcache [*group* [*source*]]

Syntax Description	
<i>group</i>	(Optional) Displays the fast-switching cache for the single group. The <i>group</i> argument can be either a Class D IP address or a DNS name.
<i>source</i>	(Optional) If <i>source</i> is also specified, displays a single multicast cache entry. The <i>source</i> argument can be either a unicast IP address or a DNS name.

Command Modes	
EXEC	

Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines	
Use this command on the RP.	

The following is sample output from the **show ip mcache** command. This entry shows a specific source (wrn-source 204.62.246.73) sending to the World Radio Network group (224.2.143.24).

```
Router# show ip mcache wrn wrn-source

IP Multicast Fast-Switching Cache
(204.62.246.73/32, 224.2.143.24), Fddi0, Last used: 00:00:00
 Ethernet0      MAC Header: 01005E028F180000C1883D30800
 Ethernet1      MAC Header: 01005E028F180000C1883D60800
 Ethernet2      MAC Header: 01005E028F180000C1883D40800
 Ethernet3      MAC Header: 01005E028F180000C1883D70800
```

Table 116 describes the significant fields in the display.

Table 116 *show ip mcache Field Descriptions*

Field	Description
204.62.246.73	Source address.
224.2.143.24	Destination address.
Fddi0	Incoming or expected interface on which the packet should be received.

Table 116 *show ip mcache Field Descriptions (continued)*

Field	Description
Last used:	<p>Latest time the entry was accessed for a packet that was successfully fast-switched.</p> <ul style="list-style-type: none"> • “semi-fast” indicates that the first part of the outgoing interface list is fast switched and the rest of the list is process level switched. • “mds” indicates multicast distributed switching is being used instead of the fast cache. • “never” indicates the fast cache entry is not used (it is process switched).
Ethernet0 MAC Header:	Outgoing interface list and respective MAC header that is used when rewriting the packet for output. If the interface is a tunnel, the MAC header will show the real next hop MAC header and then, in parentheses, the real interface name.

The following is sample output from the **show ip mcache** command when MDS is in effect.

```
Router# show ip mcache
```

```
IP Multicast Fast-Switching Cache
(*, 224.2.170.73), Fddi3/0/0, Last used: mds
  Tunnel3      MAC Header: 5000602F9C150000603E473F60AAAA030000000800 (Fddi3/0/0)
  Tunnel0      MAC Header: 5000602F9C150000603E473F60AAAA030000000800 (Fddi3/0/0)
  Tunnell      MAC Header: 5000602F9C150000603E473F60AAAA030000000800 (Fddi3/0/0)
```

show ip mds forwarding

On a line card, to display the MFIB table and forwarding information for multicast distributed switching (MDS), use the **show ip mds forwarding** EXEC command.

```
show ip mds forwarding [group-address] [source-address]
```

Syntax Description	<i>group-address</i>	(Optional) Address of the IP multicast group for which to display the MFIB table.
	<i>source-address</i>	(Optional) Address of the source of IP multicast packets for which to display the MFIB table.

Command Modes EXEC

Command History	Release	Modification
	11.2(11)GS	

Usage Guidelines Use this command on the line card. This command displays the MFIB table, forwarding information and related flags and counts.



Note To reach a line card's console, enter **attach slot#** (slot number where the line card resides).

On a GSR only, line card commands can be executed from the RP using the following syntax: **execute [slot slot-number | all] command**

The *command* is any of the line card **show** commands, such as **show ip mds summary** and **show ip mds forward**.

Examples The following is sample output from the **show ip mds forwarding** command:

```
Router# show ip mds forwarding
IP multicast MDFS forwarding information and statistics:
Flags: N - Not MDFS switchable, F - Not all MDFS switchable, O - OIF Null
       R - In-ratelimit, A - In-access, M - MTU mismatch, P - Register set

Interface state: Interface, Next-Hop, Mac header

(*, 224.2.170.73),
  Incoming interface: Null
  Pkts: 0, last used: never, Kbps: 0, fast-flags: N
  Outgoing interface list: Null

(128.97.62.86, 224.2.170.73) [31]
  Incoming interface: Fddi3/0/0
  Pkts: 3034, last used: 00:00:00, Kbps: 0, fast-flags: M
  Outgoing interface list:
```

Table 117 describes the significant fields in the display.

Table 117 *show ip mds forwarding Field Descriptions*

Field	Description
(128.97.62.86, 224.2.170.73) [31])	Source and group addresses. Number in [] is the hash bucket for the route.
Incoming interface:	Expected interface for a multicast packet from the source. If the packet is not received on this interface, it is discarded.
Pkts	Total number of packets switched by that entry.
last used:	Time when this MFIB entry was used to switch a packet.
Kbps:	Kilobits per second of the switched traffic.
Outgoing interface list:	Interfaces through which packets will be forwarded.

show ip mds interface

To display the status of multicast distributed switching (MDS) interfaces, use the **show ip mds interface** EXEC command.

show ip mds interface

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2(11)GS	This command was introduced.

Usage Guidelines Use this command on the RP.

Examples The following is sample output from the **show ip mds interface** command:

```
Router# show ip mds interface

Ethernet1/0/0 is up, line protocol is up
Ethernet1/0/1 is up, line protocol is up
Fddi3/0/0 is up, line protocol is up
FastEthernet3/1/0 is up, line protocol is up
```

Table 118 describes the fields in the display.

Table 118 *show ip mds interface Field Descriptions*

Field	Description
Ethernet1/0/0 is up	Status of interface.
line protocol is up	Status of line protocol.

show ip mds stats

To display switching statistics or line card statistics for multicast distributed switching (MDS), use the **show ip mds stats EXEC** command.

show ip mds stats [switching | linecard]

Syntax Description

switching	(Optional) Displays switching statistics.
linecard	(Optional) Displays line card statistics.

Command Modes

EXEC

Command History

Release	Modification
11.2(11)GS	This command was introduced.

Usage Guidelines

Use this command on the RP.

Examples

The following is sample output from the **show ip mds stats** command with the **switching** keyword:

```
Router# show ip mds stats switching
```

Slot	Total	Switched	Drops	RPF	Punts	Failures (switch/clone)
1	0	0	0	0	4	0/0
3	20260925	18014717	253	93	2247454	1/0

Table 119 describes the fields in the display.

Table 119 *show ip mds stats switching Field Descriptions*

Field	Description
Slot	Slot number for the line card.
Total	Total number of packets received.
Switched	Total number of packets switched.
Drops	Total number of packets dropped.
RPF	Total number of packets that failed RPF lookup.
Punts	Total number of packets sent to the RP because the line card could not switch them.
Failures (switch/clone)	Times that the RP tried to switch but failed due to lack of resources / clone for RSP only; failed to get a packet clone.

The following is sample output from the **show ip mds stats** command with the **linecard** keyword:

```
Router# show ip mds stats linecard
```

```
Slot      Status   IPC(seq/max) Q(high/route)  Reloads
 1         active   10560/10596   0/0             9
 3         active   11055/11091   0/0             9
```

Table 120 describes the fields in the display.

Table 120 *show ip mds stats linecard Field Descriptions*

Field	Description
Slot	VIP card slot.
Status	
IPC (seq/max)	Interprocess communication of packets sent from the RP to the VIP.
Q (high/route)	
Reloads	Number of times the image on the VIP was reloaded.

show ip mds summary

To display a summary of the MFIB table for multicast distributed switching (MDS), use the **show ip mds summary** EXEC command.

show ip mds summary

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2(11)GS	This command was introduced.

Usage Guidelines Use this command on a line card. On a GSR only, line card commands can be executed from the RP using the following syntax:

execute [*slot slot-number* | **all**] *command*

The *command* is any of the line card **show** commands, such as **show ip mds summary** and **show ip mds forward**.

Examples The following is sample output from the **show ip mds summary** command:

```
Router# show ip mds summary

IP multicast MDFS forwarding information and statistics:
Flags: N - Not MDFS switchable, F - Not all MDFS switchable, O - OIF Null
       R - In-ratelimit, A - In-access, M - MTU mismatch, P - Register set

Interface state: Interface, Next-Hop, Mac header

(*, 224.2.170.73),
  Incoming interface: Null
  Pkts: 0, last used: never, Kbps: 0, fast-flags: N
(128.97.62.86, 224.2.170.73) [31]
  Incoming interface: Fddi3/0/0
  Pkts: 3045, last used: 00:00:03, Kbps: 0, fast-flags: M
(128.223.3.7, 224.2.170.73) [334]
  Incoming interface: Fddi3/0/0
  Pkts: 0, last used: never, Kbps: 0, fast-flags: M
```

Table 121 describes the fields in the display.

Table 121 *show ip mds summary Field Descriptions*

Field	Description
(128.97.62.86, 224.2.170.73) [31]	Source and group addresses. Number in [] is the hash bucket for the route.
Incoming interface	Expected interface for a multicast packet from the source. If the packet is not received on this interface, it is discarded.
Pkts	Total number of packets switched by that entry.
last used	Time when this MFIB entry was used to switch a packet.
Kbps	Kilobits per second of the switched traffic.

show ip pim interface count

To display switching counts for multicast distributed switching (MDS) and other fast switching statistics, use the **show ip pim interface count EXEC** command.

show ip pim interface [*type number*] **count**

Syntax Description	<i>type number</i>	(Optional) Interface type and number. If these arguments are specified, information is displayed about that interface only.
---------------------------	--------------------	---

Command Modes	EXEC
----------------------	------

Command History	Release	Modification
	11.2(11)GS	This command was introduced.

Usage Guidelines	Use this command on the RP.
-------------------------	-----------------------------

Examples The following is sample output from the **show ip pim interface count** command:

```
Router# show ip pim interface count
Address          Interface          FS  Mpackets In/Out
128.223.224.8    Ethernet1/0/0     D   4/0
128.223.225.1    Ethernet1/0/1     D   0/0
128.223.222.8    Fddi3/0/0         D 20182993/56931
128.223.156.1    FastEthernet3/1/0 D 59991/462385
137.39.26.98     Tunnel0            * 394681/10686513
128.223.90.13    Tunnel1            * 517821/7185605
128.223.90.25    Tunnel3            * 26282/20027641
128.223.90.29    Tunnel4            * 2415/8688961
```

Table 122 describes the fields in the display.

Table 122 *show ip pim interface count* Field Descriptions

Field	Description
Address	Source address of the IP multicast packet.
Interface	Interface on which the packets are arriving.
FS	D indicates the packets were distributed switched.
Mpackets In/Out	Number of multicast packets received/number of multicast packets sent out.

■ show ip pim interface count